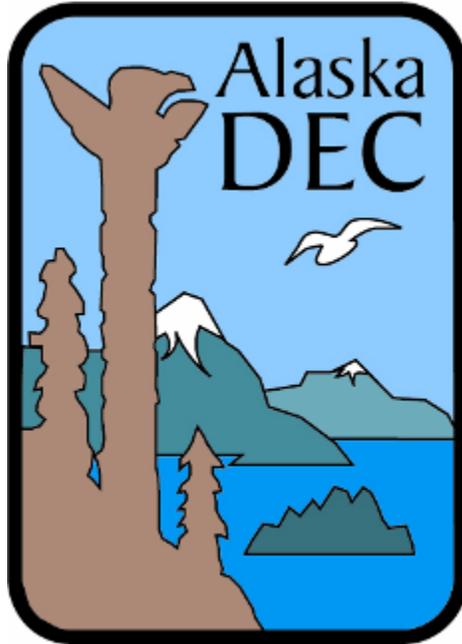


# Alaska's Air Monitoring 2011 Network Plan

## Chapter 6 – Noatak Lead Monitoring



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## Table of Contents

<b>6</b>	<b><i>NOATAK LEAD MONITORING SITE</i></b> .....	<b>6-1</b>
<b>6.1</b>	<b>General Information</b> .....	<b>6-1</b>
<b>6.2</b>	<b>NATIVE VILLAGE OF NOATAK SITE- NORTHWEST ARCTIC BOROUGH</b> .....	<b>6-2</b>
6.2.1	Site Information .....	6-2
6.2.2	Sources.....	6-3
6.2.3	Monitors.....	6-3
6.2.4	Siting.....	6-3
6.2.5	Traffic .....	6-4

## List of Figures

<i>Figure 6.1:1: Satellite image of the Northwest Arctic Borough area.</i> .....	6-2
<i>Figure 6.2:1 shows the map location of the Noatak monitoring site.</i> .....	6-3
<i>Figure 6.2:2: Photographs of the Noatak Site</i> .....	6-5

## 6 NOATAK LEAD MONITORING SITE

### 6.1 General Information

The EPA established the original NAAQS for lead in 1978 at 1.5 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ). Between 1978 and now, more than 6000 studies have repeatedly shown the deleterious health effects from exposure to lead in the environment. Of primary importance is the finding that lead can cause neurological defects and learning disabilities in children at lower levels than previously thought. Low levels of lead can result in decreases in IQ and memory, slower learning and changes in behavior. On October 15, 2008 the EPA revised the NAAQS for lead from  $1.5 \mu\text{g}/\text{m}^3$  to  $0.15 \mu\text{g}/\text{m}^3$ . As a requirement under the revised NAAQS, the EPA required monitoring to be conducted in all of the states to ascertain compliance with the new standard.

The overall objective of the monitoring program in the Native Village of Noatak is to determine Alaska's compliance status with the October 15, 2008 revision to the NAAQS for lead. The Red Dog Mine is the only entity in the state of Alaska that has the potential to emit over one ton of lead per year and; therefore, requires a source-oriented monitoring site under the revised NAAQS. The mine is located in a remote area of northwestern Alaska in the Northwest Arctic Borough which has an area of 40,762 square miles or about the size as the state of Indiana. The ambient air boundary of mine is located in extremely rugged terrain with no road access. The closest population center to the mine is Noatak, a village of approximately 450 residents located approximately 30 miles to the south. Figure 6.1:1 is a satellite image of the Northwest Arctic Borough showing Noatak and other villages in relation to the Red Dog Mine.

Area temperatures in the winter range from  $-45^{\circ}\text{F}$  to  $25^{\circ}\text{F}$  and in the summer,  $25^{\circ}\text{F}$  to  $75^{\circ}\text{F}$ .

The Alaska Department of Environmental Conservation, Air Quality Division staff is conducting the sampling with the assistance of local site operators contracted through the Native Village of Noatak IRA. The sampling program in Noatak began in January 2010.

The samples are collected by drawing ambient air, at a known volume and rate, through a glass fiber filter. Any dust or particulate matter in that volume of air is captured onto the filter. Samples are collected over a 24-hour period. Samples are collected in accordance the EPA National Ambient Air Monitoring schedule. The airborne dust is referred to as total suspended particulate (TSP) matter. The samples are shipped to Anchorage for laboratory analysis to determine the lead (Pb) content of the airborne dust collected on the filter. The sampling and analysis method is referred to as TSP-Pb.



**Figure 6.1:1:** Satellite image of the Northwest Arctic Borough area. The stars indicate Noatak, the Red Dog Mine, and other area villages.

## ***6.2 NATIVE VILLAGE OF NOATAK SITE- NORTHWEST ARCTIC BOROUGH***

**Noatak, Alaska**  
**Parameters: TSP *Pb***

**AQS ID N/A**  
**Established: January 15, 2010**

### **6.2.1 Site Information**

Currently there is one collocated State and Local Air Monitoring Systems (SLAMS) site in Noatak, Alaska located near the center of the village. The site coordinates are: latitude 67° 34.2' north (67.5701), longitude 162 °, 58.1' west (-162.9680). Site elevation is approximately 26 meters (85 feet) above sea level.

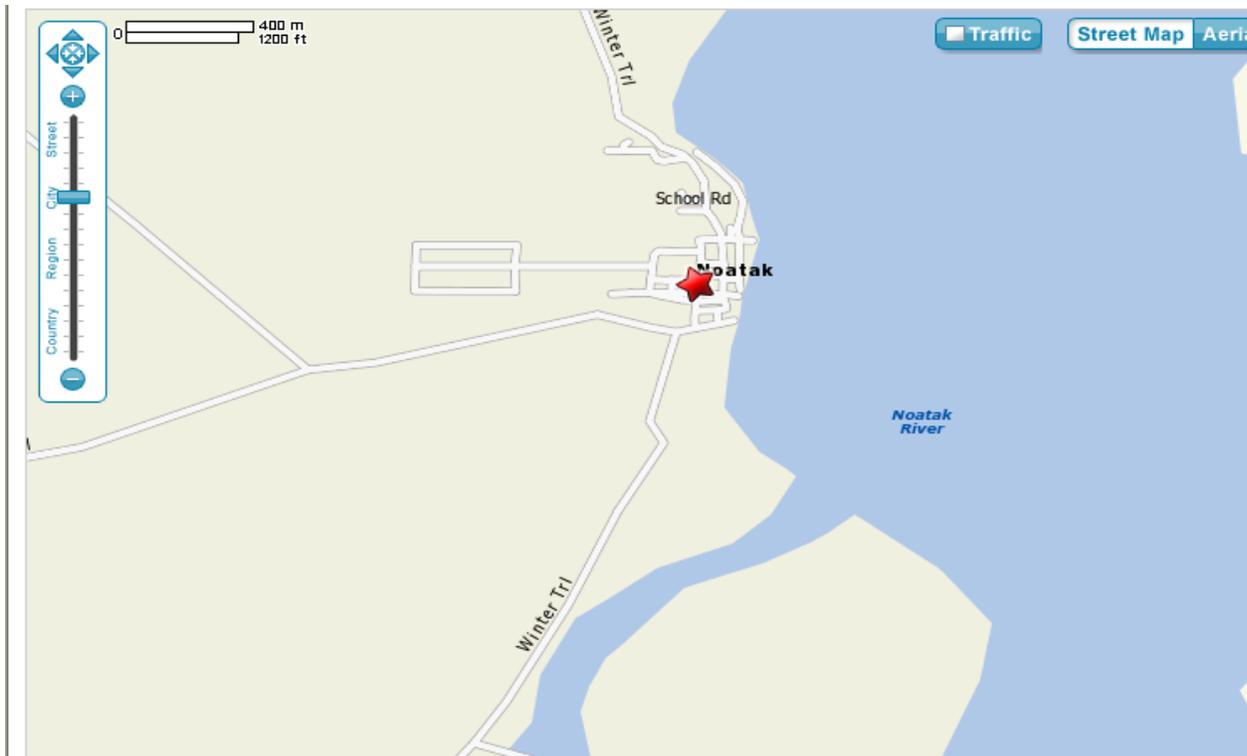


Figure 6.2:1 shows the map location of the Noatak monitoring site.

### 6.2.2 Sources

Sources of particulate matter containing lead that may impact this site would be fugitive dust transported over a great distance from the Red Dog Mine or from wind-blown soils with naturally occurring lead. The Noatak River feeds out of the Brooks Range depositing fine glacial silt throughout the meandering river basin. During times when the river is low (spring and fall) dry, windy weather suspends large amounts of silt in the air resulting with wind-blown dust events. Other sources of air-borne dust result from trucks and 4-wheeler all terrain vehicles run over unpaved village roads. Sources of fine particulate matter that may contain lead are engines which still burn leaded fuel like piston-engine aircraft. As with other communities in Alaska, strong wintertime temperature inversions increase air pollution concentrations.

### 6.2.3 Monitors

The Noatak monitoring site is currently equipped with:

- TSP-Pb (SLAMS) – Two General Metal Works TSP high-volume samplers, equipped with electronic mass flow controllers, and operated on a 1-in-6 day sampling schedule.

### 6.2.4 Siting

The manual operated samplers are located on a scaffolding platform. All inlets are at a height of approximately 3 meters (9-10 feet) above the ground. There is uninterrupted airflow around the

inlets. The platform is to be expanded in the summer of 2010 to meeting siting criteria for collocated samplers.

The monitoring objective of this site is to measure the lead content of total suspended particulate. Photographs of the Noatak site are presented in Figure 6.2.2.

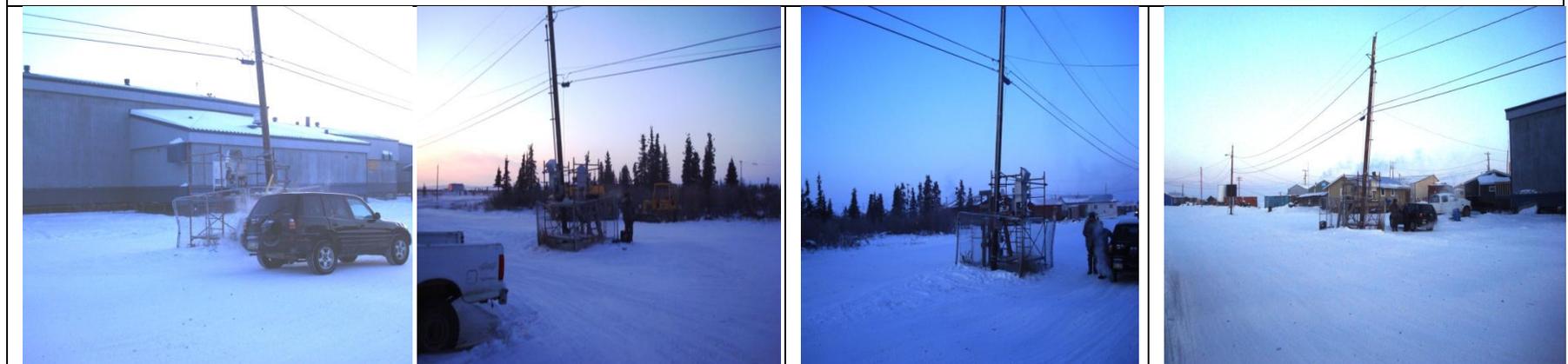
#### **6.2.5 Traffic**

All the roads in the village are unpaved. Average daily traffic for area roads is not known but is a mixture of automobiles, trucks, but mostly four wheeled all terrain vehicles (ATVs). In the wintertime the traffic is mostly snow machines.

**Figure 6.2:1: Photographs of the Noatak Site**



**Views in four directions from the Noatak Site**



**Views from four directions toward the Noatak Site**